the skeleton and adjacent surface of the component.

2. (REJECTED §103, AMENDED) The method as claimed in Claim 1, [and] further comprising:

[immediately before] prior to the severing step, [intimately] bonding the second stem end to the component.

3. (REJECTED §103, AMENDED) A method for mounting a protuberant conductive contact to an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

[intimately] bonding the feed end to the component,

forming, from the bonded feed end, a stem which protrudes from the component, said stem having [and has] a first stem end which is the bonded feed end [~~thereat~~] ,

severing the stem at a second stem end to define a skeleton,

depositing a metallic conductive material to jacket the skeleton and adjacent surface of the component.

a1

4. (REJECTED §103, AMENDED) The method as claimed in Claim 1, [and] further comprising:

[immediately] after the severing step, continuing sequentially the bonding step and the forming step and the severing step for a predetermined number of stems to comprise the skeleton.

5. (REJECTED §103, AMENDED) The method as claimed in Claim 4, [and] further comprising:

[immediately] before each of the severing steps, each of the second stem ends is [intimately] bonded to the component.

6. (REJECTED §103, AMENDED) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

[intimately] bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal, said stem having [and has] a first stem end which is the bonded feed end [thereat] ,

severing the stem at a second stem end to define a skeleton,

depositing a metallic conductive material to envelop the skeleton and adjacent surface of the terminal.

7. (REJECTED §103, AMENDED) The method as claimed in Claim 6, [and] further comprising:

[immediately] before the severing step, [intimately] bonding the second stem to the terminal.

8. (REJECTED §103, AMENDED) The method as claimed in Claim 6, [and] further comprising:

[immediately] after the severing step, continuing sequentially the bonding step and the forming step and the severing step for a predetermined number of stems to comprise the skeleton.

9. (REJECTED §103, AMENDED) The method as claimed in Claim 8, [and] further comprising:

[immediately] before each of the severing steps, each of the second stem ends is [intimately] bonded to the terminal.

10. (REJECTED §103, AMENDED) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

[intimately] bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal, said stem having [and has] a first stem end which is the bonded feed end [thereat] ,

severing the stem at a second stem end to define a skeleton,

depositing a metallic conductive material to jacket the skeleton and adjacent surface of the terminal.

11. (REJECTED §103, AMENDED) The method as claimed in Claim 10, [and] further comprising:

[immediately] before the severing step, [intimately] bonding the second stem end to the terminal.

12. (REJECTED §103, AMENDED) The method as claimed in Claim 10, [and] further comprising:

a1

[immediately] after the [last mentioned] severing step, continuing sequentially the bonding step and the forming step and the severing step for a predetermined number of stems to comprise the skeleton.

13. (REJECTED §103, AMENDED) The method as claimed in Claim 12, [and] further comprising:

[immediately] before each of the severing steps, each of the second stem ends is [intimately] bonded to the terminal.

14. (REJECTED 112/2 and 103, AMENDED) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end and a length,

[intimately] in a first bonding step, bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal, said stem having [and has] a first stem end which is the bonded feed end [thereat],

sequentially bonding intermediate portions along the length of the wire to the terminal, forming protruding stem

segments between each pair of bonds, and

[intimately bonding a second stem end to the terminal,

sequentially continuing the forming step and the bonding step for a predetermined number of times,]

in a final [after the last] bonding step, severing the [stem] wire to define a skeleton, and

depositing a metallic conductive material to envelop the skeleton and adjacent surface of the [terminal] electronic component .

Sub B1
A1

15. (AS FILED, ALLOWED) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

intimately bonding the feed end to the terminal,

forming from the bonded feed end a stem which protrudes from the terminal and has a first stem end thereat,

bonding a second stem end to a sacrificial member mounted in spaced relationship from the component,

severing the stem at the second stem end to define a skeleton,

depositing a conductive material to envelop the skeleton and at least adjacent surface of the component,

eliminating the sacrificial member.

16. (AS FILED, ALLOWED) The method as claimed in Claim 15, wherein during the eliminating step the second stem ends are severed from the sacrificial member.

17. (REJECTED 112/2 and 103, AMENDED) The method as claimed in Claim [6, 7, 8, 9, 14 or] 15, performed on a plurality of the terminals on the electronic component.

18. (REJECTED §112/2 and §103, AMENDED) The method as claimed in Claim [17] 15 , performed on a plurality of wires on a plurality

Sub B1 cont'd

of the terminals on the electronic component.

19. (REJECTED §112/2 and §103, AMENDED) The method as claimed in Claim [17] 15 , [with] wherein:

the bonding is performed by applying at least one of a group consisting of superambient pressure, superambient temperature and ultrasonic energy.

20. (REJECTED §112/2 and §103, AMENDED) The method as claimed in Claim [17] 15 , wherein:

the severing of the second end is performed by melting the wire.

a1

21. (REJECTED §112/2, OTHERWISE ALLOWABLE, AMENDED) The method as claimed in Claim [17] 15, wherein:

the forming steps and the severing steps are performed by a wirebonding apparatus, and

after the severing steps but before the depositing step, shaping the skeleton by means of a tool external to the apparatus.

22. (REJECTED §112/2 and §103, AMENDED) The method as claimed in Claim [17] 15 , wherein:

the severing of the second end[s] is performed by mechanical shearing.

23. (REJECTED §112/2 and §103, AMENDED) The method as claimed in Claim [17] 15 , wherein:

the stem has a shape; and

further comprising:

during the forming step, the shape of the stems is determined by means of a software algorithm in a control system of an automated wirebonding apparatus.

24. (REJECTED §103, AMENDED) The method as claimed in Claim [6, 7, 8, 9 or] 15, performed on a plurality of the terminals,

wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

25. (OBJECTED TO, REWRITTEN) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

intimately bonding the feed end to the terminal,

forming from the bonded feed end a stem which protrudes from the terminal and has a first stem end thereat,

bonding a second stem end to a sacrificial member mounted in spaced relationship from the component,

a1

severing the stem at the second stem end to define a skeleton,

depositing a conductive material to envelop the skeleton and at least adjacent surface of the component, and

eliminating the sacrificial member,

further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

[The method as claimed in Claim 24,]

wherein the conductive material is provided with a multitude of microprotrusions on its surface.

26. (REJECTED §112/2, OTHERWISE ALLOWABLE, AMENDED) The method as claimed in Claim [17] 15, [with] wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises [the depositing step including placement of] a plurality of dissimilar layers [each differing from one another] .

Sub B' cont'd

27. (OBJECTED TO, REWRITTEN) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

intimately bonding the feed end to the terminal,

forming from the bonded feed end a stem which protrudes from the terminal and has a first stem end thereat,

bonding a second stem end to a sacrificial member mounted in spaced relationship from the component,

severing the stem at the second stem end to define a skeleton,

depositing a conductive material to envelop the skeleton and at least adjacent surface of the component, and

a1

eliminating the sacrificial member,

further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

[The method as claimed in Claim 24,]

wherein the depositing step includes placement of a plurality of layers each differing from one another.

28. (OBJECTED TO, AMENDMENT NOT REQUIRED) The method as claimed in Claim 27, wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

29. (WITHDRAWN FROM CONSIDERATION, AMENDED) The method as claimed in Claim [17 or 24] 15, wherein:

the deposition is performed by means of electrochemical plating in an ionic solution.

30. (OBJECTED TO, REWRITTEN) A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal and has a first stem end,

severing the stem at a second stem end to define a skeleton,

depositing a conductive material to envelop the skeleton and adjacent surface of the terminal,

[The method as claimed in Claim 6 or 8, performed] further comprising:

performing the method on a plurality of the terminals and,

wherein:

the forming steps result in a plurality of free-standing protuberant stems,

the severing steps are performed on the respective stems all in a common plane.

31. (OBJECTED TO, REWRITTEN) The method as claimed in Claim [6 or 8,] 30 [performed on a plurality of the terminals on at least one electronic component and], wherein:

the terminals are in different planes [,

the forming steps result in a plurality of free-standing protuberant stems,

the severing steps are performed on the respective stems all in a common plane].

32. (REJECTED §103, AMENDED) The method as claimed in Claim 6 [or 8] , performed on a plurality of terminals on at least one electronic component, wherein shapes of the skeleton and mechanical properties of the conductive material are organized collectively

to impart resilience to the protuberant conductive contacts, and the severing steps are performed on all the stems in a common plane.

Please cancel claim 33, without prejudice. Claim 33 was withdrawn from consideration and read as follows: "The method, as claimed in Claim 17 or 24, wherein the cross-sectional area of the wire is rectangular."

34. (WITHDRAWN FROM CONSIDERATION, AMENDED) The method as claimed in Claim [26 or 27] 1, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and [alloys thereof] their alloys, and [wherein]

at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and [alloys thereof] their alloys.

35. (REJECTED §112/2, OTHERWISE ALLOWABLE, AMENDED) The method as claimed in Claim 14, [6, 7, 8, or 14, performed] further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys [thereof];

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, [and alloys thereof] and their alloys ;

a top layer of the conductive material is solder selected

from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys .

36. (NOT CONSIDERED, AMENDED) The method as claimed in Claim [26 or 27] 15, wherein [a layer reactive with material of the wire is interposed between the skeleton and the conductive material] the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

37. (NOT CONSIDERED, AMENDED) The method as claimed in Claim [26 or 27] 36 , wherein the wire is gold and the [reactive layer is] conductive layer contains tin.

Please cancel claim 38, without prejudice. Claim 38, as originally filed, read as follows: "An electronic component a first and a second surface in which on at least one of the surfaces is provided a plurality of the terminals having protuberant conductive contacts mounted thereto and made by means of the method as claimed in any of claims 6, 7, 8, 14, 15 or 34."

Please enter the following newly-presented claims:

-- 39. The method as claimed in Claim 3, further comprising:

after the severing step, continuing sequentially the bonding step and the forming step and the severing step for a predetermined number of stems to comprise the skeleton.

40. The method as claimed in Claim 39, further comprising:

before each of the severing steps, each of the second stem ends is intimately bonded to the component.

41. The method as claimed in Claim 3, further comprising:

before the severing step, bonding the second stem to the

electronic component.

42. The method as claimed in Claim 3, further comprising:
after the severing step, continuing sequentially the bonding step and the forming step and the severing step for a predetermined number of stems to comprise the skeleton.

43. The method as claimed in Claim 3, further comprising:
before each of the severing steps, each of the second stem ends is bonded to the electronic component.

44. The method as claimed in Claim 7, further comprising:
before each of the severing steps, each of the second stem ends is bonded to the terminal.

a3

45. The method of ~~claim 14~~, wherein the severing step occurs at substantially the same location as the first bonding step, and the protruding stem segments define a bounded spatial area.

46. The method of claim 45, wherein the conductive material is solder.

47. The method of claim 46, wherein the solder covers the skeleton and the bounded spatial area.

48. The method of claim 47, further comprising:
disposing the electronic component on a heat sink, with the solder of the bounded spatial area in contact with the heat sink.

49. The method of claim 47, further comprising:
disposing the electronic component on a substrate with the solder of the bounded spatial area in contact with the substrate.

Sub B3

50. A method for mounting a conductive contact to a conductive terminal on an electronic component, the method comprising the steps of:

first, providing a wire having a continuous feed end, and bonding the feed end to the terminal,

after bonding the feed end, forming, from the bonded feed end, a stem which protrudes from the terminal, said stem having a first stem end which is the bonded feed end,

after forming the stem, bonding a second stem end to a sacrificial member mounted in spaced relationship from the component,

after bonding the second stem end, severing the stem at the second stem end to define a skeleton, and

further comprising:

depositing a conductive material to envelop the skeleton and at least adjacent surface of the component,

eliminating the sacrificial member.

a3

51. A method for mounting a conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

bonding the feed end to a sacrificial member;

forming from the bonded feed end a stem which protrudes from the component, said stem having a first stem end which is the bonded feed end and a second stem end at an opposite end of the stem;

bonding the second stem end to a terminal on the electronic component;

severing the stem at the second stem end to define a skeleton,

depositing a conductive material to envelop the skeleton and at least adjacent surface of the component, and

eliminating the sacrificial member.

Sub B3 cont'd

52. A method for mounting a conductive contact to an area on a surface of an electronic component, the method comprising the steps of:

providing a wire having a continuous feed end,

bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal, said stem having a first stem end which is the bonded feed end,

bonding a second stem end to a sacrificial member mounted in spaced relationship from the component,

severing the stem at the second stem end to define a skeleton,

A3

depositing a conductive material to envelop the skeleton and at least adjacent surface of the component,

eliminating the sacrificial member.

53. A method for mounting a conductive contact to an area on a surface of an electronic component, the method comprising the steps of:

providing a wire having a continuous feed end,

bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal said stem having a first stem end which is the bonded feed end,

bonding a second stem end to a sacrificial member mounted in spaced relationship from the component,

severing the stem at the second stem end to define a skeleton,

eliminating the sacrificial member; and

after eliminating the sacrificial member, depositing a conductive material to envelop the skeleton and at least adjacent surface of the component.

~~54. The method as claimed in Claim 1, performed on a plurality of the terminals on the electronic component.~~

55. The method as claimed in Claim 3, performed on a plurality of the terminals on the electronic component.

56. The method as claimed in Claim 6, performed on a plurality of the terminals on the electronic component.

57. The method as claimed in Claim 14, performed on a plurality of the terminals on the electronic component.

Sub B4
C3

58. The method as claimed in Claim 17, performed on a plurality of wires on a plurality of the terminals on the electronic component.

59. The method as claimed in claim 6, performed on a plurality of wires on a plurality of the terminals on the electronic component.

60. The method as claimed in Claim 6, wherein:

the severing of the second end is performed by melting the wire.

61. The method as claimed in Claim 6, wherein:

the severing of the second end is performed by mechanical shearing.

62. The method as claimed in Claim 1, performed on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

63. The method as claimed in Claim 2, performed on a plurality of the terminals, wherein a shape of the skeleton and

mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

64. The method as claimed in Claim 3, performed on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

65. The method as claimed in Claim 4, performed on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

a3

66. The method as claimed in Claim 6, performed on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

67. The method as claimed in Claim 8, performed on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact.

68. The method as claimed in Claim 1, wherein:

the conductive material is provided with a multitude of microprotrusions on its surface.

69. The method as claimed in Claim 2, wherein:

the conductive material is provided with a multitude of microprotrusions on its surface.

70. The method as claimed in Claim 3, wherein:

the conductive material is provided with a multitude of microprotrusions on its surface.

71. The method as claimed in Claim 4, wherein:

the conductive material is provided with a multitude of microprotrusions on its surface.

72. The method as claimed in Claim 6, wherein:

the conductive material is provided with a multitude of microprotrusions on its surface.

a3

73. The method as claimed in Claim 1, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of dissimilar layers.

74. The method as claimed in Claim 2, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of dissimilar layers.

75. The method as claimed in Claim 3, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of dissimilar layers.

76. The method as claimed in Claim 4, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of dissimilar layers.

77. The method as claimed in Claim 6, wherein:

the conductive material enveloping the skeleton and at

least the adjacent surface of the component comprises a plurality of dissimilar layers.

78. The method as claimed in Claim 8, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of dissimilar layers.

Sub B5

79. The method as claimed in Claim 15, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of dissimilar layers.

a3

80. The method as claimed in Claim 17, wherein:

the conductive material enveloping the skeleton and at least the adjacent surface of the component comprises a plurality of layers.

81. The method as claimed in Claim 1, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another.

82. The method as claimed in Claim 2, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another.

83. The method as claimed in Claim 3, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another.

84. The method as claimed in Claim 4, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another.

a3

85. The method as claimed in Claim 6, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another.

86. The method as claimed in Claim 8, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another.

87. The method as claimed in Claim 1, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience

to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another; and

wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

88. The method as claimed in Claim 2, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another; and

wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

a3

89. The method as claimed in Claim 3, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another; and

wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

90. The method as claimed in Claim 4, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the

conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another; and

wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

A3

91. The method as claimed in Claim 6, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another; and

wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

92. The method as claimed in Claim 8, further comprising:

performing the method on a plurality of the terminals, wherein a shape of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contact;

wherein the depositing step includes placement of a plurality of layers each differing from one another; and

wherein at least one of the layers comprising conductive material has a jagged topography in order to reduce contact resistance of the protuberant conductive contact when mated to a matching terminal.

Sub B6

93. The method as claimed in claim 17, wherein:

the deposition is performed by means of electrochemical

Sub B6 cont'd

plating in ~~an~~ ionic solution.

94. The method as claimed in claim 24, wherein:
the deposition is performed by means of electrochemical plating in an ionic solution.

95. The method as claimed in Claim 1, wherein:
the deposition is performed by a process of electrochemical plating in an ionic solution.

96. The method as claimed in Claim 2, wherein:
the deposition is performed by a process of electrochemical plating in an ionic solution.

a3

97. The method as claimed in Claim 3, wherein:
the deposition is performed by a process of electrochemical plating in an ionic solution.

98. The method as claimed in Claim 4, wherein:
the deposition is performed by a process of electrochemical plating in an ionic solution.

99. The method as claimed in Claim 6, wherein:
the deposition is performed by a process of electrochemical plating in an ionic solution.

100. The method as claimed in Claim 8, wherein:
the deposition is performed by a process of electrochemical plating in an ionic solution.

101. Method, as set forth in claim 1, wherein:
the conductive material is deposited by an electroless plating process.

102. Method, as set forth in claim 3, wherein:

the conductive material is deposited by an electroless plating process.

103. Method, as set forth in claim 6, wherein:
the conductive material is deposited by an electroless plating process.

104. Method, as set forth in claim 10, wherein:
the conductive material is deposited by an electroless plating process.

Sub B7

105. Method, as set forth in claim 15, wherein:
the conductive material is deposited by an electroless plating process.

A3

106. Method, as set forth in claim 1, further comprising:
during deposition of the conductive material, causing a compressive internal stress in the conductive material.

107. Method, as set forth in claim 3, further comprising:
during deposition of the conductive material, causing a compressive internal stress in the conductive material.

108. Method, as set forth in claim 6, further comprising:
during deposition of the conductive material, causing a compressive internal stress in the conductive material.

109. Method, as set forth in claim 10, further comprising:
during deposition of the conductive material, causing a compressive internal stress in the conductive material.

Sub B8

110. Method, as set forth in claim 15, further comprising:
during deposition of the conductive material, causing a compressive internal stress in the conductive material.

111. A method for mounting a protuberant conductive contact to a conductive terminal on an electronic component, the method comprising the sequential steps of:

providing a wire having a continuous feed end,

bonding the feed end to the terminal,

forming, from the bonded feed end, a stem which protrudes from the terminal and has a first stem end,

severing the stem at a second stem end to define a skeleton,

depositing a conductive material to envelop the skeleton and adjacent surface of the terminal,

further comprising:

after the severing step, continuing sequentially the bonding step and the forming step and the severing step for a predetermined number of stems to comprise the skeleton,

further comprising:

performing the method on a plurality of the terminals and,

wherein:

the forming steps result in a plurality of free-standing protuberant stems,

the severing steps are performed on the respective stems all in a common plane.

112. The method as claimed in Claim 111, wherein:

the terminals are in different planes.

a3

113. The method as claimed in Claim 8, performed on a plurality of terminals on at least one electronic component, wherein shapes of the skeleton and mechanical properties of the conductive material are organized collectively to impart resilience to the protuberant conductive contacts, and the severing steps are performed on all the stems in a common plane.

114. The method, as claimed in Claim 1, wherein:
the cross-sectional area of the wire is rectangular.

Sub B9

115. ~~The method~~, as claimed ~~in Claim~~ 15, wherein:
the cross-sectional area of ~~the~~ wire is rectangular.

a3

116. The method as claimed in Claim 3, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys, and

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous,

boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

117. The method as claimed in Claim 6, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys, and

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

a3

118. The method as claimed in Claim 10, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys, and

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

Sub B10

119. The method as claimed in Claim 15, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys,

Sub B^D cont'd

and

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

120. The method as claimed in Claim 1, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys.

a3

121. The method as claimed in Claim 3, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys.

122. The method as claimed in Claim 6, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys.

123. The method as claimed in Claim 10, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys.

124. The method as claimed in Claim 14, wherein:

the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium,

~~ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys.~~

Sub B11

~~125. The method as claimed in Claim 15, wherein:~~

~~the wire is made of a metal selected from a group consisting of gold, silver, beryllium, copper, aluminum, rhodium, ruthenium, palladium, platinum, cadmium, tin, lead, indium, antimony, phosphorous, boron, nickel, magnesium, and their alloys.~~

A3

126. The method as claimed in Claim 1, wherein:

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

127. The method as claimed in Claim 3, wherein:

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

128. The method as claimed in Claim 6, wherein:

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

129. The method as claimed in Claim 10, wherein:

the conductive material is deposited as a plurality of

layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

Sub B12

130. The method as claimed in Claim 15, wherein:

the conductive material is deposited as a plurality of layers, and at least one of the layers of the conductive material is a metal selected from a group consisting of nickel, phosphorous, boron, cobalt, iron, chromium, copper, zinc, tungsten, tin, lead, bismuth, indium, cadmium, antimony, gold, silver, rhodium, palladium, ruthenium, and their alloys.

a3

131. A method, according to claim 1, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys .

132. A method, according to claim 2, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the

conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys .

133. A method, according to claim 3, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys .

134. A method, according to claim 4, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys.

a3

135. The method as claimed in Claim 6, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and alloys thereof;

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and their alloys.

A3

136. A method, according to claim 8, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys .

137. A method, according to claim 10, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the

conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys.

138. A method, according to claim 14, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

a3

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys.

Sub B13

139. A method, according to claim 15, further comprising:

performing the method on at least one terminal on an electronic component, wherein:

the wire is made primarily of a metal selected from a group consisting of gold, copper, aluminum, silver, lead, tin, indium and their alloys;

the skeleton is coated with a first layer of the conductive material selected from a group consisting of nickel, cobalt, boron, phosphorous, copper, tungsten, titanium, chromium, and their alloys;

a top layer of the conductive material is solder selected from a group consisting of lead, tin, indium, bismuth, antimony, gold, silver, cadmium and alloys thereof and their alloys.

140. The method as claimed in Claim 1, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

141. The method as claimed in Claim 6, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

a3

142. The method as claimed in Claim 8, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

Sub B4

143. The method as claimed in Claim 17, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

144. The method as claimed in Claim 24, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

145. The method as claimed in Claim 26, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

Sub B14 cont'd

146. The method as claimed in Claim 27, wherein the conductive material is reactive with the wire stem; and

further comprising:

a barrier layer which is not reactive with the wire stem disposed between the wire stem and the conductive material.

a3

147. The method as claimed in Claim 1, wherein:

each of two surfaces of the electronic component has at least one protuberant contact mounted thereto.

148. The method as claimed in Claim 3, wherein:

each of two surfaces of the electronic component has at least one protuberant contact mounted thereto.

149. The method as claimed in Claim 6, wherein:

each of two surfaces of the electronic component has at least one protuberant contact mounted thereto.

150. The method as claimed in Claim 10, wherein:

each of two surfaces of the electronic component has at least one protuberant contact mounted thereto.

151. The method as claimed in Claim 14, wherein:

each of two surfaces of the electronic component has at least one protuberant contact mounted thereto.

Sub B15

152. The method as claimed in Claim 15, wherein:

each of two surfaces of the electronic component has at least one protuberant contact mounted thereto.

153. The method as claimed in Claim 1, wherein:

the wire stem is S-shaped.

154. The method as claimed in Claim 3, wherein:
the wire stem is S-shaped.

155. The method as claimed in Claim 6, wherein:
the wire stem is S-shaped.

156. The method as claimed in Claim 10, wherein:
the wire stem is S-shaped.

157. The method as claimed in Claim 14, wherein:
the wire stem is S-shaped.

a3 Sub B1

~~158. The method as claimed in Claim 15, wherein:
the wire stem is S-shaped.~~

--

[Additionally, please enter the following claims:]

-- 159. Method of forming a resilient contact structure extending from a surface of an electronic component, comprising:

bonding an end of a wire to a terminal on a surface of an electronic component to extend initially in a first direction from the surface of the electronic component;

configuring the wire to have a shape including at least two bends;

severing the wire so that a severed end of the wire extends generally in the first direction; and

overcoating the wire and an area surrounding the bonded end of the wire with an electrically conductive, metallic material;

wherein:

the shape of the wire and the mechanical properties of the metallic material cooperate to impart resiliency to a resulting resilient contact structure comprising the wire and the metallic material.

160. Method for manufacturing a conductive contact on an electronic component, comprising:

bonding an end of a wire to a first area on a surface of an electronic component;

shaping the wire to extend as a wire stem from the surface of the electronic component;

severing the wire stem so that it has a free end and a length; and

depositing a conductive coating having at least one layer on the wire stem;

wherein:

the conductive coating covers at least a portion of the wire stem, said portion of the wire stem commencing at the bonded end of the wire stem and continuing along its length; and

the conductive coating covers a second area on the surface of the electronic component, said second area being larger than and encompassing the first area.

A3

Sub B17

161. Method, according to claim 160, wherein:

the conductive coating covers the entire length of the wire stem.

162. Method, according to claim 160, wherein:

at least one layer of the conductive coating is deposited along the entire length of the wire stem.

163. Method, according to claim 160, wherein:

the conductive coating covers only a portion of the length of the wire stem.

164. Method, according to claim 160, further comprising:

supplying the wire from a spool of wire.

165. ~~Method, according to~~ claim 160, wherein:

the first area is a conductive terminal disposed on the surface of the electronic component.

166. Method, according to claim 160, wherein:

the first area is a first portion of a conductive terminal; and

the second area is a second portion of the conductive terminal.

167. Method, according to claim 160, further comprising:

forming a plurality of wire stems at a plurality of first and second areas on a conductive layer of the electronic component.

a3

168. Method, according to claim 160, wherein:

the wire stem is shaped in two-dimensions to define a skeleton of a resulting contact.

169. Method, according to claim 160, wherein:

the wire stem is shaped in three-dimensions to define a skeleton of a resulting contact.

170. Method, according to claim 160, wherein:

the wire stem is shaped to have an S-shape.

171. Method, according to claim 160, wherein:

the wire stem is shaped to extend normal to the surface of the electronic component.

172. Method, according to claim 160, wherein:

the wire stem is shaped to extend at an angle to the surface of the electronic component.

Sub B18 ~~173.~~ Method, according to claim 160, wherein:

the electronic component is an interconnection substrate.

Sub B18 cont'd

174. Method, according to claim 160, wherein:
the electronic component is a semiconductor device.

175. Method, according to claim 134, wherein:
the semiconductor device is a silicon device.

176. Method, according to claim 134, wherein:
the semiconductor device is a gallium arsenide device.

177. Method, according to claim 160, wherein:
the electronic component is an interconnect socket.

a3

178. Method, according to claim 160, wherein:
the electronic component is a test socket.

179. Method, according to claim 160, wherein:
the electronic component is a semiconductor wafer.

180. Method, according to claim 160, wherein:
the electronic component is a ceramic semiconductor package.

181. Method, according to claim 160, wherein:
the electronic component is a plastic semiconductor package.

182. Method, according to claim 160, wherein:
the wire stem is bonded to the surface of the electronic component using ultrasonic bonding equipment.

183. Method, according to claim 160, wherein:
the wire stem is bonded to the surface of the electronic component using thermosonic bonding equipment.

184. Method, according to claim 160, wherein:

Sub B18 cont'd

the wire stem is bonded to the surface of the electronic component using thermocompression bonding equipment.

185. Method, according to claim 160, wherein wirebonding equipment is used to bond the end of the wire stem to the surface of the electronic component, and further comprising:

during shaping, controlling all aspects of geometric characteristics of the wire stem with a specific set of commands entered into an electronic control system of the wirebonding equipment.

a3

186. Method, according to claim 160, wherein:

automated wirebonding equipment, controllable by a software algorithm, is used to shape the wire stem and to determine the coordinate of a tip of its free end.

187. Method, according to claim 160, further comprising:

shaping the wire stem with automated equipment controlled by a control system, according to a set of specified parameters.

188. Method, according to claim 160, wherein:

the wire is severed by generating a spark.

189. Method, according to claim 160, wherein:

the wire is severed using a flame-off technique.

190. Method, according to claim 160, further comprising:

in same step as severing the wire stem, forming a ball at a tip of the free end of the wire stem.

191. Method, according to claim 160, wherein:

the conductive coating is deposited by an electrochemical process.

192. Method, according to claim 160, wherein:

the conductive coating is deposited by an electrolytic plating process.

193. Method, according to claim 160, wherein:
the conductive coating is deposited by an electroless plating process.

Sub B19

194. Method, according to claim 160, wherein:
the conductive coating is deposited by a process selected from the group consisting of physical vapor deposition and chemical vapor deposition.

a3

195. Method, according to claim 160, wherein:
the conductive coating is deposited by a process that involves the decomposition of gaseous, liquid or solid precursors.

196. Method, according to claim 160, further comprising:
providing the conductive coating with a plurality of local protrusions.

197. Method, according to claim 196, further comprising:
reducing a contact resistance between the conductive contact and an electronic device to which the conductive contact is mated with the local protrusions.

198. Method, according to claim 196, wherein:
the local protrusions are provided by dendritic growth of an electroplated deposit.

199. Method, according to claim 196, wherein:
the local protrusions are provided by incorporation of foreign particulates into the conductive coating during its deposition onto the wire stem.

200. Method, according to claim 196, wherein:

a uniform first layer of the conductive coating is deposited onto the wire stem; and

further comprising forming the local protrusions in a subsequently deposited layer of the conductive coating.

201. Method, according to claim 200, wherein:

the first layer is selected to be a material suitable for imparting resilient properties to the conductive contact; and

the subsequently deposited layer is selected to be a material that reduces the contact resistance between the conductive contact and the electronic device to which the conductive contact is mated.

a3

202. Method, according to claim 160, wherein:

an outer one of a plurality of layers deposited on the wire stem includes a conductive material is selected from the group consisting of gold, ~~silver~~, elements of the platinum group, and their alloys.

203. Method, according to claim 160, wherein:

the wire stem comprises a material selected from the group consisting of gold, aluminum, copper, beryllium, cadmium, silicon, magnesium, silver and platinum, and their alloys.

Sub B20

204. Method, according to claim 160, wherein:

the wire stem has a diameter between 0.0005 and 0.005 inches.

205. Method, according to claim 204, wherein:

the wire stem has a diameter between 0.0007 and 0.003 inches

206. Method, according to claim 160, wherein:

the conductive coating comprises a material selected from the group consisting of nickel, ~~copper~~, cobalt, iron, and their

~~alloys.~~

Sub B21

207. Method, according to claim 160, wherein:
the coating has a tensile strength in excess of 80,000 pounds per square inch.

208. Method, according to claim 160, further comprising:
during deposition of the conductive coating, causing a compressive internal stressing in the conductive coating.

Sub B22

209. Method, according to claim 160, wherein:
the nickel has a thickness between 0.00005 and 0.007 inches.

a3

210. Method, according to claim 209, wherein:
the nickel has a thickness between 0.00010 and 0.003 inches.

211. Method, according to claim 160, wherein:
the conductive coating is deposited as two or more layers, at least the outer layer of the two or more layers being a conductive material.

212. Method, according to claim 211, wherein:
a first layer, deposited onto the wire stem, is nickel; and
a second layer deposited over the first layer is a material selected from the group consisting of gold, silver, elements of the platinum group, and their alloys.

213. Method, according to claim 211, wherein:
the two or more layers are selected to tailor the mechanical characteristics of the protuberant contact.

214. Method, according to claim 160, wherein:

the first area includes a layer of material selected from the group consisting of gold and aluminum.

215. Method, according to claim 160, wherein:

the first area and the second area are portions of a conductive layer previously applied to the surface of the electronic component.

216. Method, according to claim 215, further comprising:

after bonding, removing the conductive layer from the electronic component, selectively, in all but the first and second area.

a3

217. Method, according to claim 160, further comprising:

establishing a predetermined resiliency for the contact based on a shape of the wire stem and characteristics of the conductive coating selected from the group consisting of thickness, yield strength, and elastic modulus.

218. Method, according to claim 160, wherein:

the wire stem comprises a material having a first strength; and

the conductive coating comprises a material having a second strength which is greater than the strength of the first material.

Sub B23

219. Method, according to claim 160, wherein:

the conductive contact has controlled characteristics selected from the group consisting of physical properties, metallurgical properties, mechanical properties, bulk and surface.

220. Method, according to claim 160, wherein:

the raised conductive contact is shaped as a pin-shaped contact; and

the electronic component is a pin grid array package.

221. Method, according to claim 220, wherein:

the pin grid array package is a ceramic pin grid array package.

222. Method, according to claim 220, wherein:

the pin grid array package is a plastic pin grid array package.

Sub B24

a3

223. Method, according to claim 160, further comprising:

bonding, shaping and severing a plurality of wire stems, a first portion of the wire stems originating from a first level of the electronic component, a second portion of the wire stems originating from a second level of the electronic component, said first level and said second level being non-coplanar with one another;

wherein:

the free ends of said plurality of wire stems are severed to be substantially coplanar with one another.

224. Method, according to claim 223, wherein:

the free ends of the wire stems are severed to extend to a plane parallel to at least one of the first and second levels of the electronic component.

225. Method, according to claim 160, further comprising:

bonding, shaping and severing a plurality of wire stems, a first portion of the wire stems originating from a first electronic component, a second portion of the wire stems originating from a second electronic component;

wherein:

the free ends of said plurality of wire stems are severed to be substantially coplanar with one another.

226. Method, according to claim 225, wherein:

the free ends of the wire stems are severed to extend to a plane parallel to at least one of the first and second electronic components.

227. Method, according to claim 160, further comprising:

bonding, shaping and severing a plurality of wire stems originating from the electronic component, a first portion of the wire stems terminating on a first electronic device, a second portion of the wire stems terminating on a second electronic device.

228. Method, according to claim 160, further comprising:

bonding, shaping and severing a plurality of wire stems;

wherein:

a first portion of the wire stems are severed to terminate at a first level above the surface of the electronic component; and

a second portion of the wire stems are severed to terminate at a second level above the surface of the electronic component, said first level and said second level being non-coplanar.

229. Method, according to claim 160, further comprising:

bonding, shaping and severing a plurality of wire stems originating from at least two electronic components, each of a portion of the wire stems extending from a corresponding one of the at least two electronic components.

230. Method, according to claim 229, further comprising:

interconnecting the first and second electronic components.

231. Method, according to claim 229, wherein:

one of the first and second electronic components is a capacitor.

232. Method, according to claim 229, wherein:

one of the first and second electronic components is a resistor.

233. Method, according to claim 160, further comprising:

bonding, shaping and severing a plurality of wire stems;

wherein:

a first portion of the wire stems are severed to terminate at a first level above the surface of the electronic component; and

a second portion of the wire stems are severed to terminate at a second level above the surface of the electronic component, said first level and said second level being non-coplanar; and

further comprising:

terminating the first portion of the wire stems on an interconnection substrate; and

terminating the second portion of the wire stems on an electronic device disposed between the interconnection substrate and the electronic component.

234. Method, according to claim 233, wherein:

the electronic component is a bare, unpackaged semiconductor device.

235. Method, according to claim 233, wherein:

the electronic device is a capacitor.

236. Method, according to claim 233, wherein:

the electronic component is a bare, unpackaged semiconductor device; and

the electronic device is a capacitor.

a3

237. Method, according to claim 160, wherein:

the conductive coating comprises solder, and the conductive contact is a tower-like solder contact extending from the surface of the electronic component.

238. Method, according to claim 237, further comprising:

prior to depositing the conductive coating on the wire stem, depositing a barrier layer on the wire stem, said barrier layer being a material selected to prevent a reaction between the conductive coating and the wire stem.

239. Method, according to claim 238, wherein:

the wire stem is gold; and

the barrier layer is a material selected from the group consisting of nickel, copper, cobalt, iron, or their alloys.

a3

240. Method, according to claim 160, further comprising:

establishing the soldering characteristics of the electronic substrate by selection of a material composition of the conductive coating.

241. Method, according to claim 160, wherein:

establishing the long term effects from interaction of the raised conductive contact with solder. by selection of a material composition of the conductive coating.

Sub B25

242. Method, according to claim 160, wherein:

the wire stem has a diameter between 0.0005 and 0.005 inches; and

further comprising:

prior to depositing the solder, coating the wire stem with nickel having a thickness between 0.00005 and 0.007 inches.

243. Method, according to claim 242, wherein:

the wire stem has a diameter between 0.0007 and 0.003

Sub B25 cont'd

inches; and

the nickel has a thickness between 0.00010 and 0.003 inches.

244. Method, according to claim 160, further comprising:
shaping the wire stem in a form of a loop, said loop originating and terminating in a selected second area on the surface of the electronic component.

245. Method, according to claim 160, further comprising:
shaping the wire stem in a form of a loop, said loop originating on a conductive terminal of the electronic component, said loop terminating on a sacrificial element.

a3

246. Method, according to claim 245, further comprising:
after bonding the free end of the wire stem to the sacrificial conductor, removing the sacrificial element.

247. Method, according to claim 246, wherein:
the sacrificial element is removed after depositing the conductive coating on the wire stem.

248. Method, according to claim 246, wherein:
the sacrificial element is removed before depositing the conductive coating on the wire stem.

249. Method, according to claim 160, further comprising:
shaping the wire stem in a form of a loop, said loop originating on a sacrificial element, said loop terminating on a conductive terminal of the electronic component.

250. Method, according to claim 160, further comprising:
shaping the wire stem in a form of a loop, said loop originating in the second area on the surface of the electronic component, said loop terminating in a third area distinct from the

second area.

251. Method, according to claim 160, further comprising:

shaping the wire stem in a form of a loop, said loop originating in a third area on the surface of the electronic component, said third area distinct from said second area, and said loop terminating in the second area.

252. Method, according to claim 160, further comprising:

shaping a first length of the wire stem into a first loop, said first loop originating and terminating on a conductive terminal disposed on the surface of the electronic component;

severing the first length of the wire stem;

shaping a second length of the wire stem into a second loop, said second loop originating and terminating on the conductive terminal and being parallel to the first loop;

severing the second length of the wire; and

depositing a common conductive coating of solder on the first and second loops and onto the conductive terminal to form a controlled aspect ratio column of solder disposed on the conductive terminal of the electronic component; and

prior to depositing the common conductive coating of solder, coating the two loops with a barrier layer;

wherein:

the wire is gold;

the solder is an alloy of lead and tin; and

the barrier layer is a nickel alloy having a thickness on the wires sufficient to deter a reaction between the solder of the conductive coating and the gold of the wire.

253. Method, according to claim 160, further comprising:

prior to severing the wire, bonding an intermediate portion of the wire to the electronic component, thereby forming a skeleton on the surface of the electronic component.

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254. Method, according to claim 253, wherein:

the intermediate portion is bonded to the second area of the electronic component.

255. Method, according to claim 253, further comprising:

after bonding the intermediate portion of the wire to the electronic component, coating the skeleton with a solder mass.

256. Method, according to claim 255, further comprising:

prior to coating the skeleton with the solder mass, coating the skeleton with a barrier layer.

257. Method, according to claim 253, further comprising:

after bonding the intermediate portion of the wire to the electronic component, severing the wire to have a subsequent end for bonding as a subsequent skeleton on the surface of the electronic component.

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258. Method, according to claim 253, wherein:

a plurality of skeletons are formed on a common second area of the electronic component.

259. Method, according to claim 258, wherein:

the common second area is a terminal.

260. Method, according to claim 258, wherein:

the plurality of skeletons are overcoated in a common depositing step.

261. Method, according to claim 253, further comprising:

after bonding the intermediate portion of the wire to the electronic component, without severing the wire, continuing to bond subsequent intermediate portions of the wire, without severing, to form a sequence of skeletons on the surface of the electronic component.

262. Method, according to claim 261, further comprising:
bonding and severing a last one of the skeletons adjacent the first area.

263. Method, according to claim 261, wherein:
the sequence of skeletons defines an enclosed area on the surface of the electronic component.

264. Method, according to claim 263, further comprising:
depositing solder as the conductive coating in a manner that the solder fills the enclosed area.

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265. Method, according to claim 264, further comprising:
bringing the enclosed, solder-filled area into contact with an electronic device selected from the group consisting of heat sinks and substrates.

266. Method, according to claim 160, further comprising:
repeating the steps of bonding, shaping and severing for a plurality of wire stems, wherein the conductive coating is deposited as a common coating onto the plurality of wire stems.

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267. Method, according to claim 266, wherein:
the plurality of wire stems are arranged in an array pattern on the surface of the electronic component.

268. Method, according to claim 160, further comprising:
bonding the second end of the wire stem to the first area of the electronic component to form a loop; and
further shaping the loop to extend from the electronic component in three-dimensions.

269. Method for manufacturing electrical contacts on a surface of an electronic component, comprising, for each raised electrical contact:

bonding a one end of a wire to a first area on the surface of the electronic component, said surface of the electronic component disposed in a plane defined by an "x" axis and a "y" axis orthogonal to the "x" axis;

with the one end of the wire bonded to the area on the surface of the electronic component, extending the wire in a "z" axis mutually orthogonal to the "x" and "y" axes, and in at least one of the "x" or "y" directions;

after extending the wire, severing the wire so that it has a length and a free end opposite the one end;

while extending ~~the wire~~, shaping the wire to have at least one U-shaped bend along its length; and

after extending and shaping the wire, depositing a first electrically conductive, metallic material to cover a second area on the surface of the substrate which is greater than and which subsumes the first area to which the one end of the wire is bonded and to cover at least a portion of the length of the wire, said portion of the wire extending from the one end of the wire along the length of the wire towards the free end of the wire.

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270. Method, according to claim 269, further comprising:

depositing at least two coatings on the wire.

271. Method of connecting a first electronic component to a second electronic component, comprising:

providing a third electronic component between the first and the second electronic components, said third electronic component having a first plurality of resilient contact structures extending from a first surface thereof for contacting a corresponding plurality of contact points on a face of the first electronic component, said third electronic component having a second plurality of resilient contact structures extending from a

second surface thereof for contacting a corresponding plurality of contact points on a face of the second electronic component; and

within the third electronic component, making a connection between the first plurality of resilient contact structures and the second plurality of resilient contact structures.

272. Method, according to claim 271, wherein:

the first electronic component is a semiconductor package.

273. Method, according to claim 271, wherein:

the first electronic component is an unpackaged semiconductor die.

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274. Method, according to claim 271, wherein:

the second electronic component is a printed circuit board.

275. Method, according to claim 271, wherein:

the third electronic component provides for demountable interconnection between the first and second electronic components.

276. Method of making a temporary connection between a first electronic component and a second electronic component, and subsequently making a permanent connection between the first electronic component and a third electronic component, comprising:

mounting a plurality of resilient contact structures to a surface of the first electronic component;

urging the first electronic component against the second electronic component to effect a temporary connection between the first electronic component and the second electronic component;

removing the second electronic component; and

mounting the first electronic component to the third electronic component.

~~277. Method, according to claim 276, further comprising:~~

~~while the first and second electronic components are temporarily connected, performing at least one function selected from the group consisting of burn-in and testing of the first electronic component.~~

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